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A WATER MANAGEMENT LAW FOR ARKANSAS*

*Frank J. Trelease***

A recent study entitled "Arkansas Water: Why Wait for the Crisis?"¹ presents a paradox: it starts out with the statement that "Arkansas is truly a water-rich state," yet it ends up recommending the passage of a comprehensive water law. This beautifully presented brochure gives an excellent picture of the physical nature of the state's water supplies and a lucid exposition of the problem faced by the people of Arkansas. The pumping of water from underground sources for the irrigation of rice and supplemental irrigation of soybeans is outstripping the supply and creating serious shortages in some areas. The aquifers of eastern Arkansas are also the supply for industry and municipalities. Pumping for all these purposes is exceeding the recharge into these underground water sources and the depth to water is increasing. With energy costs rising and water levels falling, it is becoming increasingly difficult to

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1. J. Jackson and L. Mack, *Arkansas Water: Why Wait for the Crisis?* (1982) (Winthrop Rockefeller Foundation) (Hereinafter cited as Study).

justify the higher pumping expense.²

At present there seems to be no comparable shortage of water in the state's streams and lakes, yet the ground water problem threatens to spill over into the surface waters. If surface waters are turned to as an alternative supply to solve the ground water shortage, the irrigators may soon run into both legal and physical barriers. The basic rule governing Arkansas' streams and lakes is the law of riparian rights, which gives to streamside farmers the sole legal access to the water and limits the place of use to within the watershed of the stream.³ Yet irrigable lands do not all lie on the river banks, and efforts to find a supplemental supply for nonriparian lands now irrigated from wells, or to bring water from other valleys, will run up against these rules. If greater use is made of small streams, physical shortages will soon be found on them. As withdrawals for irrigation cause shortages, other water users will feel the impact. Less water will be available for fish and minnow farms, public supply to cities and metropolitan areas, industrial uses, cooling water for steam power generation and nonconsumptive use for hydroelectric power generation.⁴ Further, the mere mention of large increases in surface water diversions makes sportsmen and environmentalists spring to protect streams, lakes and wetlands.

The common law rules of riparian rights to streams and reasonable use of ground waters, administered by courts in private lawsuits, are clearly inadequate. Those laws are designed to settle squabbles between neighboring land owners,⁵ but Arkansas' water problems cover whole valleys and counties, and involve the interests of many citizens and the economic health of the state. It is clear that a major statutory change is needed. The form it should take is not so clear. If the riparian system isn't adequate, neither, according to several sources, is the doctrine of prior appropriation invented by the pioneers in the far western mountains and deserts. The "*Arkansas Water*" study puts it this way: "Nor would Arkansas benefit from overlaying its riparian laws with a 'prior-appropriation' system like that common in many western states. Prior appropriation means 'first in time, first in right'—that is, first users of the stream

2. *Id.* at 16, 18, 26.

3. *Harris v. Brooks*, 225 Ark. 436, 283 S.W.2d 129 (1955); *Harrell v. City of Conway*, 224 Ark. 100, 271 S.W.2d 924 (1954).

4. Study, *supra* note 1, at 14-15.

5. See *Jones v. Oz-Ark-Val Poultry Co.*, 228 Ark. 76, 306 S.W.2d 111 (1957); *Harris v. Brooks*, 225 Ark. 436, 283 S.W.2d 129 (1955).

may take as much water as they want, even during shortages.”⁶ That certainly does not sound like a desirable form of law.

The third choice for a water law system is usually thought to be “administrative allocation,” similar to Florida’s law, under which water officials place some restrictions on new uses and then, when shortages and emergencies occur, divide the short supplies of water among the users according to some notion of public interest or economic efficiency, or according to some predetermined order of priorities.⁷ Apparently, this also is not acceptable for Arkansas, since that system formed the basis of H.B. 60, recently rejected by the General Assembly.⁸

My suggestion for a solution will be called a water management law. Management can mean many things. For example, when water in nature serves some of man’s values, proper management would mean keeping it where it is. For most of his needs, however, the water is in the wrong place or occurs at the wrong time, and man must shift it about if it is to serve him. No matter how generous nature appears at first, there rarely seems enough. As a result, competition always springs up between groups of people who want water for different purposes and between members of a group whose individual claims exceed the group’s share. Water law must serve a dual function: it must bridge the gap between water as nature supplies it and water as man wants it, and at the same time resolve the conflict between people with different designs on the water. A water management law must control water and people in order to correlate supply to demand. What the law would really manage is people. The water supply can be augmented by giving people the tools to move the water about to where and when it is needed for irrigation, industry and cities. People can be mobilized into organizations and agencies to finance and operate water control projects. Demand can be encouraged for beneficial and efficient uses, but restraints may be necessary to curb undesirable activities and keep water where it is when the need for recreation and environmental protection is paramount.

Although people are to be managed, they must also be fostered. A good water law should be based on a proper value system; it should have an underlying bias that elicits general support. Some water laws are focused on the resource, they seem almost to en-

6. Study, *supra* note 1, at 34.

7. FLA. STAT. ANN. §§ 373-216 to -246 (West 1974 & Supp. 1983).

8. H.B. 60, 74th Gen. Ass., Reg. Sess., 1983.

shrine the water: it is treated as our most precious resource, it is to be protected, preserved, conserved. Other laws seem dominated by the notion that the purpose of law is to serve the public or the government: the water must produce the optimum development, the maximum economic benefit, and at the same time protect the public, the state, from undesirable activities of water users. My bias is in a third direction—toward people. People benefit from water use or nonuse. A statute may encourage people to act along desirable lines or deter them from harmful conduct, but its major function should be to provide people with the tools they need to accomplish their goals and satisfy their wants. Law is man's creation; law should serve man, not things or governments. If the law is to be comprehensive it must, of course, protect the resource and promote the public good, but it is *people* who want to preserve the natural features of lakes and streams; it is *people* whose farms and factories contribute not only profit to them but prosperity to the state, and it is *people* who make up the population of cities.

For emphasis, I would like to examine the needs and wants of several persons, individuals with different needs and attitudes toward water. The first, Fisher, is a member of the Izaak Walton League and the Ozark Club. He fishes the streams and floats the river. He thrills to the whistle of wings at dawn in the wetlands, he hikes the forest trails along quiet lakes. He wants these waters protected and these values preserved. The second person is Granger, a rice farmer. He combines land, labor, capital, machinery, seed, fertilizer and water to produce food for the nation. He needs about thirty inches of water on every acre of his farm, to flood the fields in May, then to replenish evaporation through the hot summer. He may get about a third of it from rain. If his source for the rest fails and his rice dries up, weeds will take over the crop, and whatever rice grows will be unmarketable. Even a partial loss of his water supply will mean loss of a year's profit. If he uses all his water for part of his land, he might save his farm, but a fraction of his crop will not pay for the total of his sunk costs. The third person is Miller, manager of a paper mill. The plant must have a relatively steady stream, several hundred thousand gallons per day, to cook the chips and wash the pulp. A partial supply may close down one production line, but a too-small supply may cause a complete shut-down of the plant. The loss will fall not only on the stockholders, but also upon the employees in the plant, the timber workers who supply the logs, the truckers who haul them, and the town, county

and state that prosper when the plant prospers. The fourth person, John Q. Smith, lives in a nice home on a quiet street in the City of Smithville. He and his wife and two children use 255 gallons per day,⁹ more when he washes his car or waters the lawn. He pays his water bill every month and never gives a thought to where the water comes from.

A water management law for Arkansas should help these people get and keep what they want. It should protect Fisher's choice environment. It should ensure that Granger does not go broke because his rice fields dry up. It should enable Miller to keep the plant operating, and it should guarantee the health and well-being of Smith and his family. This may be a difficult task. If all four of these people depend on well water, the aquifer may be losing water every year, heading for disaster. If all take from a creek, rescue of nearby overdrawn well owners may shift the disaster to the stream. Drafting a water law that can prevent or remedy these harms and accommodate these disparate demands will not be easy.

If there is not enough water to supply all of these demands, there is a shortage. Shortages do not exist in nature. In some years streams are high, in some years they are low. Only when the stream becomes a supply for man's needs, and only when his demands exceed that supply, is there a shortage. The function of water law is to handle shortages—prevent them or remedy them. Water laws come into play only when water shortages appear. Shortages take several forms and their nature must be understood. If there is usually water for all and in most years demand does not exceed the normal supply, a below average year will produce a temporary shortage. If demands on a fluctuating source are on the rise, each new increment of demand will increase both the intensity and the incidence of shortages—the low water shortages will strike deeper, the number of short years will increase. If demands increase unchecked they can exceed even a normal supply and something that may be called a permanent shortage can result.

Ground water aquifers produce special problems. When more water is pumped by modern deep wells than nature replenishes into the aquifer, no well goes dry. The water table or pressure falls, pumping costs go up, disaster approaches, but the water comes as long as the pump is switched on. This creates one of the worst types of shortage, aptly termed "the tragedy of the commons."¹⁰ The sim-

9. Study, *supra* note 1, at 17.

10. Hardin, *The Tragedy of the Commons*, 83 SCI. 1234 (1968).

plest example of the tragedy is two children, one soda, two straws. One is almost sure to end up in tears because the other was able to suck faster. The more common example is the "common pool": if ten fisherman have equal rights to fish in a pond, each has the incentive to take as many fish as possible, rather than to leave them for the others. Soon, of course, there will be none left for anyone. To avoid the tragedy, the law that gives access to the common resource must also set a limit on the total annual catch and must divide the catch among the fishermen. If there are so many claimants that equal shares for all would mean that the share of each is so small that no one has enough, there must then be some method of limiting the number of eligible claimants, not only a bag limit but also a limited number of fishing licenses.

GROUND WATER

Since ground water presents the only pressing problem at the moment, it is the logical place to start. The two principal aquifers in Arkansas are the "Sparta sand," a broad and deep layer of porous rock formed as a part of the primeval seabed that underlies the southeast quadrant of the state, and the shallower "Alluvial aquifer," sand and gravel laid down by the Arkansas, the White and the young Mississippi rivers in forming the eastern third of the state.¹¹ The latter is underlain by a sheet of impervious rock, its water comes from rain water and stream water seeping down from the surface, filling the spaces between the particles up to a level known as the "water table." The Sparta sand is confined by an overlying watertight layer of shale. The water in it comes from precipitation on the exposed edge of the sandstone, higher in the west central hills. As this pushes down on the water underlying the shale, it builds up a pressure that will force the water up into a well drilled through the shale. When the Alluvial aquifer is pumped at a rate faster than the water can be replenished through the sand and gravel, the aquifer will be partially dewatered, the water table or level in the vicinity will drop. When the artesian aquifer is overpumped, the water pressure drops, the water will not rise as high and must be pumped from a greater depth. Both aquifers have been overpumped for years by cities, pulp and paper processors, chemical companies and rice and soybean farmers. Pumping increased three and one-half times between 1970 and 1980.¹² Under

11. Study, *supra* note 1, at 11, 26.

12. *Id.* at 14.

the most heavily pumped areas, the water table and pressure levels have dropped to the point where today's high energy cost threatens to make pumped water so expensive that rice farming will become unprofitable.¹³

This is the tragedy of the commons. Although it is possible that low water tables may affect stream levels and wetlands, I know nothing of such occurrence in Arkansas. Our environmentalist friend is therefore not involved here, but the others are, since Granger's irrigation well, Smithville's city wells and Miller's industrial plant all draw from the same aquifer. Although nature does not replenish as much as they take, all their pumps reach the water and each takes as much as his pump will produce. Part of the water will be the annual recharge, the rest will come from water laid down long ago, stored water that holds this season's water at its accessible level. As that water is withdrawn, the whole supply falls below the economic reach of Granger. It takes money to lift water from hundreds of feet below the surface. When this cost increases to the point that it has eaten all of Granger's profit, he will go out of the rice business.

The existing Arkansas law of groundwater seems to offer no help. It is found in a single case, *Jones v. Oz-Ark-Val Poultry Company*,¹⁴ which established two propositions. First, the court applied the "American reasonable use rule" to the case of an industrial user whose deep well lowered the water level so far that nearby domestic wells would not draw water. By holding this practice to be unreasonable, the court forced the industrial user to improve or pay for the improvements needed by its less affluent neighbors. Second, though there was water enough for all, the court stated a rule for shortages, quoting a California case that defined the rule of reasonable use as giving each overlying landowner a "correlative right" to use the common supply, to the full extent of his needs if the supply is sufficient, and to the extent of a reasonable share if there is not enough for all.¹⁵

Neither aspect of the *Oz-Ark-Val* case has a bearing on the current problem. This is not a simple case of the big user with the better cost-spreading capacity lowering the water table out from under the old oaken bucket of the neighboring individual. The Ar-

13. *Id.* at 26.

14. 228 Ark. 76, 306 S.W.2d 111 (1957). The statutes regulating well construction (ARK. STAT. ANN. §§ 21-2001 to -2020 (Supp. 1983)) and requiring capping of artesian wells (ARK. STAT. ANN. §§ 21-1101 to -1108 (1968)) do not apply to the problem discussed in this article.

15. *Hudson v. Dailey*, 156 Cal. 617, 105 P. 748 (1909).

kansas irrigators are responsible for 78% of consumptive use of water from all sources, while public supply and industry account for only 5% and 4% respectively.¹⁶ Granger's loss is thus a self-inflicted wound, the Miller company and Smithville have no obligation to bail him out.

Nor will the *Oz-Ark-Val* dictum, that the law of correlative rights will govern shortages, really put the brakes on this headlong rush to the tragedy of the commons. That doctrine was invented by a California judge¹⁷ who thought he had a single choice: between the "American" rule, which gives each landowner a fair share of groundwater, and the "English rule," which places no restrictions at all upon the overlying landowner. He properly characterized the English rule as "no law," a rule of anarchy, quoting an old poem:

The good old rule
Sufficeth them, the simple plan,
That they should take who have the power,
And they should keep who can.¹⁸

He thought the correlative rights rule was the better, that it would give a user protection from his more powerful neighbor, a property right to have the water continue to come to his land, a right he would enforce by legal means.¹⁹

Unfortunately, the rule of correlative rights has not brought this about in California. The rule is not self-executing. The shares of the hundreds of well owners in most basins can be determined only after lawsuits of incredible length, complexity and cost. Some rather small, very permeable basins have been found susceptible to an across-the-board cutback applied equally to all water users,²⁰ but cities are not treated as overlying landowners by the rule, and they have ended up with superior rights by prescription.²¹ The principal fault of the rule is that it places no limits on well drilling or pumping until too late. The only restraints come after the situation has deteriorated. After eighty years of correlative rights, serious overdrafts now exist in eight of California's eleven ground water areas.²²

16. Study, *supra* note 1, at 16.

17. See *Katz v. Walkinshaw*, 141 Cal. 116, 70 P. 663 (1902), *rev'd on reh'g*, 141 Cal. 116, 74 P. 766 (1903).

18. *Katz*, 141 Cal. at —, 74 P. at 769.

19. *Id.* at —, 74 P. at 771.

20. *City of Pasadena v. City of Alhambra*, 33 Cal. 2d 908, 207 P.2d 17 (1949).

21. *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 123 Cal. Rptr. 1, 537 P.2d 1250 (1975).

22. It is also possible that the long drawn out and expensive adjudication may not

If current Arkansas practices continue without control, the situation may clarify itself, but in a most unpleasant and unsatisfactory manner. As wells are driven deeper and deeper, as pumping costs rise higher and higher, some farmers will fall out of the race. The capital costs of deeper wells and the current costs of bringing up the water will be too great to enable them to irrigate crops profitably. The products of the industrial users can support the higher costs, the cities can call upon all their inhabitants to pay small increases in their water bills. But the farmers will one by one go broke, pull their pumps, plug their wells and turn to less profitable crops, until enough of them have been forced to quit pumping to allow the water to reach its prior level. Economics will cause the water to move to the more profitable uses, but this is not the desirable operation of the market place, where resources ideally move to their highest and best use because those users can bid the highest. The industrial and municipal users will not compete economically for the water; they will not pay for it; those who gain the water will not pay those who lose it. The solution will come only when enough Arkansans go broke.

A ground water shortage can be eliminated by one of two methods: either supply must be augmented or demand must be trimmed. If the first cannot be done, the second must be, but cutting back pumping is a difficult and unpleasant task. Water management that increases the supply to meet the needs is much more popular.

CONJUNCTIVE USE

Ground water management that provides a physical solution to a shortage nearly always involves some form of "conjunctive use" of surface water and ground water. Conjunctive use is the term applied to several different practices and processes employed to coordinate the use of ground and surface water and get the maximum economic benefits from both resources.²³ One form of conjunctive use has been the salvation of California: overdrawn ground water basins have been rescued by bringing in surface water from large

finally settle the matter. In the most recent case, the California court hints that overlying landowners who were not using water and were not made parties to the twenty year suit may still have rights to initiate new overlying uses subsequent to the judgment. *City of Los Angeles*, 14 Cal. 3d at —, 123 Cal. Rptr. at 69, 537 P.2d at 1318.

23. Trelease, *Conjunctive Use of Groundwater and Surface Water*, 27B ROCKY MTN. MIN. L. INST. 1853 (1982).

streams, often from far away.²⁴ In some cases the physical solution has been to recharge the aquifer by running the water into gravel pits, irrigating loose and sandy soils or actually pumping water into the ground. In others, some water users turn off their pumps and directly use enough stream water to leave a full supply of ground water for those still pumping. Legal problems can crop up over rights to cross divides and export water from other watersheds, as well as rights to recapture it and keep others' hands off it once it is imported,²⁵ but these are details for the draftsman.

The city of Los Angeles was the protagonist in this field and its lead has been followed by huge regional and state projects. Local surface water in Southern California was long ago exhausted and limits were reached on the ground water supplies. The Los Angeles Aqueduct from the Owens Valley and Mono Lake region and the Metropolitan Water District's Colorado River Aqueduct bring water from hundreds of miles away. The State Water Project operates a complex of dams and pumping plants, canals and tunnels that bring the waters of the northern Sacramento Valley southward, where much of it is pumped over the Tehachapi Mountains to Los Angeles and beyond. Waters from these sources are juggled, commingled, stored above and below ground, used, recharged, and re-used in as complex an example of conjunctive use as can be imagined.

The Arkansas solutions will not be as large as those in California, but they will still involve substantial projects that affect many users. What will be needed is an organization that can act as a middleman and acquire water in wholesale lots and distribute it to consumers at retail. Conjunctive use by many persons of water from different sources can be a complicated process. It may be necessary to pool all water rights and place them in a management agency that will have a free hand to coordinate the activities of many individuals and firms without attempting to administer individual water rights. These will be large scale operations that create a need to form a common front, to pool finances, and to obtain large amounts of capital for dams, reservoirs, pumps and pipelines. An organization may be needed to combine the resources of individuals, firms,

24. Robie, *Water Management of the Future: A Groundwater Storage Program for the California State Water Project*, 11 PAC. L. J. 41 (1979); A. Schneider, *Groundwater Rights in California* 35-36 (1977) (Governor's Commission to Review California Water Rights Law, Staff Paper No. 2).

25. *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 123 Cal. Rptr. 1, 537 P.2d 1250 (1975); *City of Los Angeles v. Glendale*, 23 Cal. 2d 68, 142 P.2d 289 (1943).

municipalities, districts and perhaps the state itself. With proper powers of taxation and assessment, it could get contributions from reluctant beneficiaries, and it should also have powers to equitably allocate costs to particular beneficiaries or spread them over the group as a whole.

Water management districts can take different forms. In some, the district can be the sole supplier of water, its facilities can replace the wells and ditches of the consumer, and its rights can supersede their former rights. In others, the district may be superimposed on a pattern of old rights to increase the supply and make the increase available for old, new, and expanded uses, with charges or assessments adjusted according to benefits received.

Many conjunctive uses are handled by the California "Groundwater Replenishment Districts." The most famous of these is the Orange County Water District (OCWD), the first of the agencies created to settle the difficult water problems faced in Southern California.²⁶ Orange County, southeast of Los Angeles, is an area of expanding population and rapid urbanization sitting atop an overdrawn ground water basin. The district buys, from the Metropolitan Water District, water imported from the Colorado River and Northern California and adds it to the local sources. The OCWD has very broad statutory powers for the general purpose of replenishing, regulating, and protecting the ground water within its boundaries for the common benefit. It is authorized to store water in underground basins; appropriate and acquire water and water rights; purchase and import water; buy, sell, and exchange water; distribute water to users; reduce ground water extractions; reclaim and treat water; and aid users in the purchase of nontributary supplies.²⁷ The district can levy general ad valorem taxes, pump taxes, replenishment assessments on nonirrigation water and "basin equity assessments."²⁸ The pump taxes and replenishment assessments are fixed at an amount needed to acquire water and facilities for replenishing the annual or accumulated overdraft on the safe yield of the basin's ground water. The basin equity assessment is a device for equalizing the cost of water between ground water pumpers and those who receive surface supplies. Each year, OCWD predicts the

26. For a full description, see Corker, *Groundwater Law, Management and Administration* 212-26 (1971) (National Water Commission Legal Study No. 6); A. Schneider, *Groundwater Rights in California* 37-56 (1977) (Governor's Commission to Review California Water Rights Law, Staff Paper No. 2).

27. CAL. WATER CODE APP. § 40-2(6) (West Supp. 1980).

28. CAL. WATER CODE APP. § 40-18 (West 1968); 40-27, 27.1, 31.5 (West Supp. 1981).

total water use and determines the ratio between the amount that can be pumped and the amount of imported water to be obtained. If a user then pumps more than that ratio of his requirement, he must pay the basin equity assessment on the excess pumped. Meanwhile, another user, whose facilities are better suited to receive the more expensive imported water, takes all or most of his water in that form, and the money from the basin equity assessment is credited to his account. In this way, all users in the district pay approximately the same price per acre-foot of water no matter what the source, and all water users pay part of the cost for importing water even though some use none of it.

Another type of California district is typified by the Central and West Basin and Water Replenishment District in the San Gabriel River watershed, adjacent to the OCWD in the north. The Water Replenishment District Act²⁹ authorizes districts formed under it to engage in replenishment programs and levy pump taxes in a fashion similar to the OCWD, but there are several important differences. In the Central and West Basin, the rights of existing pumpers of groundwater were fixed by an adjudication based on a percentage of prior pumping during the period of overdraft. In Orange County, the pre-existing rights of water users are unknown and of no account; in the Central and West Basins such rights give the holder an important advantage. A pumper who takes no more than his adjudicated share of the safe yield of the basin is exempt from replenishment assessments. However, the adjudicated right does not give the holder an advantage in obtaining water. Since the district purchases large quantities of imported water and replenishes the groundwater by spreading and injection, pumping is not limited to the safe yield of the basin. The adjudicated right gives the pumper only an economic advantage in avoiding direct assessment for "his own" water, and that advantage is lessened by the gross pump tax which all pumpers pay regardless of rights. The adjudicated rights are also valuable because they may be sold or leased within the respective basins. They also serve as key elements in two unique water management techniques—the exchange pool and the "in lieu replenishment" program. Under the exchange pool system, holders of adjudicated rights who take less than their legal share of water release the unused water to the pool and are paid from funds contributed by pumpers who take more than their share.³⁰ The "in

29. CAL. WATER CODE §§ 60300-60352 (West 1966).

30. Schneider, *supra* note 24, at 46-47.

lieu replenishment" program applies to customers (many of which are themselves municipal water suppliers to people in the smaller subdivisions of the Los Angeles metropolitan area) which have access to other surface water. The district may contract with the water user to pay a portion of the price of the supplemental water, and thus reduce extraction or imports.³¹

REGULATION

The "supply side economics" of conjunctive use may not solve all of Arkansas' ground water problems. Some rescue schemes may not be economically viable. Projects for importation of water must produce enough benefits to exceed their costs. Ideally the receiver of the benefits should be the person to pay the costs. Existing water users, saved from disaster, may owe the most, and others who are saved from large pumping costs must contribute. If the project can also supply water to new users, they should pay in full. The businessmen and city residents who benefit from the agricultural prosperity and trade brought by the project may be expected to contribute through taxes. If these water users and secondary beneficiaries cannot pay the full costs out of the benefits generated, there is little point in subsidizing a sick economy that only produces a constant drain on the state. Conjunctive use is justifiable only if it can pay for itself.

Physical feasibility is another aspect of financial feasibility. If recharge is impossible, if canals would be too lengthy or take too much land, if water supplies are not reliable, the costs of overcoming these difficulties may be too great. If rescue by imported water is economically or physically out of reach, either the tragedy of the commons must take its toll by burning out enough farmers to reduce the overdraft, or some more palatable method must be found to cut back withdrawals to match the safe yield.

Priority of appropriation will not do. While it might be argued that because the newer wells created the shortage, the loss might justly fall on them, other factors bear on equity. The *Oz-Ark-Val* case³² created expectations of equality and probably of sharing, and in that light no one had any thought that latecomers would suffer the entire burden. There is no indication that the risks were fully known, that the harm was foreseen, or that the later drillers were knowing wrongdoers. They exercised the rule of the commons; they

31. *Id.* at 52-53.

32. 228 Ark. 76, 306 S.W.2d 111 (1957).

followed the natural path of trying to get their share before their neighbors got it all.

An across the board cutback would seem more equitable. It might leave some users—the cities and industries—with insufficient supplies. It might leave farmers with unworkable farms, divided into fields of unhandy size and location. The remedy for this would be to determine the specific quantity for each use, by fixing the size of the total supply and of each share.³³ Once the pie is sliced in this fashion, the shares should be made transferable. The paper mill might then make up a full supply by buying the fractions allotted to several farms. One farmer might turn to other crops and sell his water to a neighbor who would continue to grow rice. Smithville might add a dollar to all of the Smiths' water bills and buy enough from Granger to restore the city supply to normal.

The situation must not be allowed to worsen. Although current shortages exist in small local areas, there may be a surplus outside these overcrowded zones. A permit system seems the only answer. New wells can be allowed outside the critical areas, but not so many as to create new shortages. Where the area is already critical and all users must share reduced withdrawals, new wells must be forbidden. History must not repeat itself.

SURFACE WATERS

Shortages on the streams and lakes will take a very different form from shortages in the ground water aquifers. Ground waters have a relatively stable safe yield, but stream flows vary from season to season and from year to year. Arkansas may be water rich, yet runoff bears some relation to precipitation, and despite an overall average rainfall of 48 inches, the low years in some areas produce only 20 inches and the highs range up to 87 inches.³⁴ On such a seesaw, the lows must occur as frequently and as strongly as the highs in order to produce the median and average flows.

Consumptive use of surface water doubled between 1970 and 1980, and the rate of growth is increasing.³⁵ When looking at the marvelous things to be done with conjunctive use, the source of the rescuing surface water was glossed over. It was assumed to be at hand, available for the taking. But consumptive use of ground water is almost three times that of surface water, and if much of the

33. See OKLA. STAT. ANN. tit. 82, §§ 1020.4 to -.22 (West Supp. 1982).

34. Study, *supra* note 1, at 9.

35. *Id.* at 14.

drain on ground water is to be shifted to the streams and added to accelerating surface diversions, serious shortages could occur in streams and lakes. If conjunctive use could be supplied wholly from the water stored behind the dams on the Arkansas and White rivers, perhaps there would be little effect. Great canals from these streams would be very expensive, however, and lesser projects that reach for smaller streams could make substantial impacts on surface water flows. Even individual farmers who once preferred wells and underground distribution systems might be able to turn to ditches and surface resources as the ground water sinks too deep. Many of them might be nonriparians, desperate to save their rice farms. All these individual efforts are just as much conjunctive use as would be the grand project, and they could be the most desirable, from an economic standpoint. Furthermore, rice growing is on the increase, and as more farmers turn to it they may be warned away from short supplies of ground water and seek the stream water that seems abundant.

Let us assume that all our friends, Fisher, Granger, Miller and Smith receive their supplies from the same creek, and that the demands they represent—environmental, agricultural, manufacturing and municipal, are all at the moment satisfied. Let us also assume that their creek is the target for several of the new demands described above. If Granger and Miller are riparian to the creek, under current surface water law they will receive a substantial amount of protection from encroachment by new users. They may have to share extreme low water flows of a dry summer among themselves, but they are relatively safe from large new withdrawals, even riparian activity, that would seriously impinge upon their water supply. In the leading case of *Harris v. Brooks*,³⁶ the Arkansas Supreme Court indicated that the reasonable use rule of riparian law contained a strong element of protection of existing uses, even from lawful uses if they seriously interfere with or destroy an earlier lawful use. This is born out by the American Law Institute's new Restatement of riparian rules that gives a large measure of protection to vested rights and requires the gainers to pay the losers when new uses supplant the old.³⁷

If new demands on the stream arise from irrigation of nonriparian land or transport to other watersheds, Granger and Miller will be similarly protected. However, the greatest likelihood of

36. 225 Ark. 436, 283 S.W.2d 129 (1955).

37. RESTATEMENT (SECOND) OF TORTS § 850A (1979).

harm from nonriparians would come not from private persons but from public agencies. Arkansas laws create irrigation, drainage and watershed districts, state water development projects and regional water distribution districts.³⁸ All of these, as well as cities like Smithville, can acquire water rights for their needs. If one takes the supply used by Granger on his farm, riparian law will protect the value of his use but not its continuance. All of these public agencies also have powers of eminent domain and can condemn water rights.

Fisher, the nature lover and sportsman, may find his favorite lake, stream, and wetland threatened. He might get some protection if the stream is navigable. Arkansas moved out of the steamboat era with *State v. McIlroy*,³⁹ which in 1980 declared the Mulberry River to be navigable, since it could be used for recreational purposes by canoeists and fishermen in flatbottomed boats for a substantial part of the year. If the creek we are looking at meets this test, passage down it may not be blocked and presumably its navigability cannot be destroyed by the abstraction of large quantities of water. Some additional hope for its preservation might come if the stream could be included within the Arkansas Natural and Scenic River System,⁴⁰ but on most small creeks and branches surrounded by private lands, public environmental protection against the exercise of private riparian rights or statutory powers seems to be nonexistent.

Fisher, Granger, Miller and Smith, all using Arkansas stream water, are not entirely helpless before forces beyond their control. Many laws seem to protect them. Yet do they not also face the tragedy of the commons? Each additional withdrawal for irrigation, industrial and municipal uses dips deeper into a variable supply. Low flows which used to be counted as normal could soon cause hardship for some water users. Droughts that used to be serious might become disastrous in terms of lost farm incomes, factory closures, municipal cutbacks and environmental values thrown away. Yet there are no legal brakes on the lawful withdrawals. The only statutory law to deal with the problem does not provide a means of preventing the harm, but only of deciding who will be hurt, and how badly. Since 1957 the Arkansas Soil and Water Conservation Com-

38. See ARK. STAT. ANN. §§ 21-901 to -934 (1968 & Supp. 1983); 21-1301 to -1316 (1968 & Supp. 1983); 21-1317 to -1331 (Supp. 1983); 21-1401 to -1415 (1968 & Supp. 1983). The state has recently authorized the Soil and Water Conservation Commission to issue Water Resources Development bonds for up to \$100,000,000, which could be made available to such districts. ARK. STAT. ANN. §§ 21-2301 to -2321 (Supp. 1983).

39. 268 Ark. 227, 595 S.W.2d 659 (1980).

40. ARK. STAT. ANN. §§ 9-1201 to -1214 (Supp. 1983).

mission has had the power, whenever a shortage of water exists in any stream, to allocate the available water to each person lawfully taking it.⁴¹ Each is to obtain his fair share of the available water. The commission is instructed to consider the use each is making of it, and to give reasonable preferences to different uses in the following order: (1) sustaining life; (2) maintaining health; (3) increasing wealth. This power has never been used. When it is, who will get the water? Who will lose it? Smithville's supply seems most secure, though Smith could help by putting a brick in his toilet tank, refraining from washing his car, and watering his lawn only once a week to keep it alive. Miller produces more wealth than Granger. Will the mill get the water and the farmer lose his crop and his investment in labor, seed and fertilizer? The statute does not mention Fisher's concern: do the wetlands dry up, lake levels drop, streams cease to flow, regardless of harm to fish and wildlife and their habitat? Although the law has never been called into play, the Soil and Water Conservation Commission could have some difficult choices if the increase of man-made demands makes shortages out of average years and disasters out of droughts.

WATER MANAGEMENT

Water management can augment surface water supplies as well as provide for conjunctive use of ground and surface waters. The statutory districts and projects that could add new pressures to streams can solve shortages as well as cause them. Reservoirs that shift the availability of water from flood season to dry season, from good year to bad year, or transbasin diversions that bring water from a big river to the valley of a small stream, can increase the usable supply to the point where there is plenty for all. They must not, however, be allowed to cause new shortages. Although these districts have the power to condemn a water supply, there is no advantage to taking Granger's water in order to turn it over to other farmers. A district certainly should not be allowed to break him, to cut into his supply and profits to a point where he abandons his water and other farmers get it for free.

The same should hold true for Smithville. When the city needs more water it should not be allowed to crowd in on the stream and crowd out Granger. It is a common fallacy to think that if a large number of people benefit from a water supply, it then serves a "pub-

41. ARK. STAT. ANN. § 21-1308 (1968).

lic use," so far superior to a private use that the latter must yield to it. The public consists of people, and there is no reason why Smith should take Granger's water from him and pay him nothing. Smith will hardly notice another dollar on his monthly water bill, but with it and the dollars of his neighbors, the city can construct a dam or pipeline and bring in new water instead of taking Granger's supply.

Under good surface water management, large new municipal projects and irrigation schemes could be required, in effect, to furnish their own supplies from dams and transbasin diversions. No longer could uncontrolled development overwhelm the streams until the Soil and Water Conservation Commission is forced to dole out the insufficient supply according to its notion of fair shares. Under water management, not only could supplies be augmented to meet demands, demand could be tailored to supplies.

Fundamental to water management is control over all major changes in the pattern of stream use. The most common is a system of permits or licenses for new structures and new withdrawals. A permit system could perform three major management functions. First, it would give the state a badly needed handle to check on environmental harms. If a proposed project is ecologically incompatible with a treasured biological or scenic resource, the state must have the power to choose nature over development and deny the permit. Conditions on permits can require minimum flows or water levels at critical points, they can prohibit the abstraction of water at critical times, or they can impose structural changes to accommodate uses with habitat.⁴²

Second, if the environmental interests stand neutral or have been satisfied, competition may show up between prospective users. In this case the permit system would supply the state with a mechanism to choose between them. When supplies become scant, the state must see that the user who gets the water will create the greatest wealth and make the biggest contribution to growth.⁴³ Indeed, the state need not take this action only in cases of simultaneous proposals. A comprehensive state water plan could provide a valuable yardstick to measure each project as it comes along.⁴⁴ Underdevelopment as well as overdevelopment can be controlled—a too modest project should not be allowed to cut the heart out of a

42. *Bank of America v. State Water Resources Control Board*, 42 Cal. App. 3d 198, 116 Cal. Rptr. 770 (1974).

43. *Young & Norton v. Hinderlider*, 15 N.M. 666, 110 P. 1045 (1910).

44. *United Plainsmen Ass'n v. North Dakota State Water Conservation Comm'n*, 247 N.W.2d 457 (N.D. 1976).

foreseeably better and larger development.⁴⁵ Desirable new uses should not be blocked by watershed and riparian land restrictions. Arkansas water should be for Arkansans, not just for the limited number of them owning riparian lands.

The third function of a permit system would be the protection of existing beneficial uses. Every new permit law has some form of savings clause for confirming or licensing "grandfather" rights to bring old as well as new water users into the same system and make them both subject to the same law. Granger, Miller and the City of Smithville should be held to the same standards of beneficial use and efficiency as new users. But most important, their grandfathered rights should be true rights—rights to a firm supply, protected from encroachment. Permits for the districts and other organizations created to handle large projects for new irrigation and conjunctive use must require those organizations to take unused water, not water already in the service of Granger and Miller. This protection must extend to the lean as well as the fat years. Physical solutions must keep short years from becoming shortage years. Storage will provide a physical solution to smooth out the supply. Since the newcomer projects will be the ones who benefit from the storage, they should be the ones who should pay for it.

The protection of existing uses should apply to newly-created rights as well. Each new user must be allowed to take only the uncommitted part of the supply, or be required to install a small dam or pond that will save spring freshets for the dry summers.

PROTECTED RIGHTS

It should now be obvious that the recommended system of water management, or more properly, people management, bears a striking resemblance to western appropriation law. Note, however, that it is not the pioneer "law of the first grabber," as "prior appropriation" translates into Anglo-Saxon English. It is not the crude system described in the study of Arkansas water law.⁴⁶ Modern appropriation law is a sophisticated system of state-granted water rights that are limited, conditioned, and controlled by the state to protect the environment, the water resources and the water users. It is a system for handling water shortages evolved during a century of experience in states where water has always been short. It is the system that has stabilized agriculture and provided for industrial

45. *Tanner v. Bacon*, 103 Utah 494, 136 P.2d 957 (1943).

46. Study, *supra* note 1, at 34.

and population growth in areas that get considerably less water than Arkansas. It is a system that can prevent the kinds of harm that Arkansas may suffer under its present laws.

Priority is not to be feared. Of course, priority should not be applied retroactively to cut back existing uses initiated under a different system. Priority should be administered prospectively, to perform two functions—to act as a limit on state powers and to serve as a guide to water users. In the first sense, priority means only that the state, having once granted some water to Granger for his farm, should not be allowed now to grant that same water to Miller's paper factory. What the state must give Miller is a right to take the water that is left, water that can be taken without harming Granger. The state should treat its water resources as a person treats his bank account. He must not write checks for more money than he has in the bank, and the state must not write permits for more water than is available in the source. In an area of an aquifer in which recharge is still available, permits should be limited to the number of wells that will withdraw that recharge. Further applications for permits should be denied. There would then be no junior appropriators; all users for whom the supply was sufficient would have firm rights to a firm supply. On a stream, there would be juniors who take high flows whose supply would cease to exist when the stream dropped. This is not an unforeseen tragedy; it is a guide to action, a datum for planning. If Granger has received a water right from a stream known to diminish in later summer, and has leveled his land, installed his pumps and sprinklers, planted and fertilized his seed, his expectations of reaching a crop should not be foiled by a subsequent water user who takes a part of his supply. The newcomer, if he is a farmer, must be satisfied to use what water remains for supplemental irrigation of crops that will not fail if not irrigated, for crops that need only spring irrigation to start them, or for full irrigation only in those years when a surplus can be safely predicted. Perhaps, since there is more water than Granger needs in the winter and spring, the newcomer may find space to store spring freshets for the dry summer, so he too can get a full rice crop. A district or state project might firm up the supply for a whole valley if a large dam or import canal is feasible. If farmers have the whole dependable supply, manufacturing companies and municipalities can purchase the water at fair prices, since they can afford to pay more than the difference in value between rice and the non-irrigated crops the farmers would resort to after the sale.

One feature of prior appropriation that often draws objections is the enforcement of priority between essentially similarly situated farmers. During most years all may find the supply adequate, but during unusual drought one may receive all his water while his neighbor receives none of his, simply because years ago the former's predecessor got his water right a year or a month before the latter. To some, a riparian type of sharing, with all similarly situated persons treated similarly, may seem preferable. This may be achieved under appropriation law if flow records are good enough to identify a dependable supply in a stream. Much sharing occurs in the western states when the supply for a project falls below expectations. The project was planned to store or import a dependable annual supply, but all plans contain some element of risk. One that takes care of most years may include a known risk that a drought of unusual intensity or length may result in a given number of years. On the rare occasions when that shortage does occur, all farmers within the project area will share the short supply proportionately. In a water rich area, something like this can be done without storage. If a stream has a fairly dependable supply for a predetermined number of acres, a plan for the irrigation of that number of acres can be given the priority as if it were a project. The individual farmer who installs his works will take a part of the plan's priority, not an individual priority ahead of or behind his neighbor. Care must be taken, however, not to gauge the dependable supply too generously, or the tragedy of the commons will be built back into the system.

Finally, appropriation law has been saddled with various stereotypes. Some say it is a law for arid lands, unsuitable for humid climes, but water rich Alaska uses the system,⁴⁷ and the wet western slopes of the Cascades in Washington⁴⁸ and Oregon⁴⁹ are governed by the same appropriation law as the deserts across the mountains. I have heard it said that appropriation is not "suitable" for Arkansas rice culture, but rice is grown under that system on both sides of the state—in Mississippi,⁵⁰ and in Texas.⁵¹ Some think prior appropriation is uncivilized, a "Wild West" law, but with some changes in terminology and enforcement procedures, England's riparian laws have given way to "protected rights" under the Water Resources

47. ALASKA STAT. §§ 46.15.010 to -.270 (1982).

48. WASH. REV. CODE ANN. §§ 90.03.010 to -.44.250 (1962 & Supp. 1983).

49. OR. REV. STAT. §§ 536.210 to -.730, 537.110-541.695 (1981).

50. MISS. CODE ANN. §§ 51-3-1 to -53 (1973).

51. TEX. WATER CODE ANN. §§ 11.001 to -.409 (Vernon Supp. 1982).

Act of 1963.⁵²

CONCLUSION

Arkansas' most precious resource is Arkansans. People—Fisher, Granger, Miller and Smith—depend upon the waters of Arkansas for their lives, their welfare and their prosperity. If Arkansas needs a new water law, it is because these people need the help of the state government to achieve these goals.

The total water in Arkansas far exceeds the total demands for that water. Locally concentrated demands may exceed locally available supplies, but additions to local supplies are physically possible. If these are also economically viable, then Arkansas needs institutional laws that will allow her people to pool their resources and form organizations to construct and operate the projects and distribute the water, collecting repayment and operating costs out of the benefits they distribute. A water management law will enable people to move water about in time and space, but water management law must manage people themselves as well. Granger the farmer, Smith the city dweller, and Miller the factory owner must not spoil Arkansas for Fisher the environmentalist. The law must provide a means to strike a balance between Fisher and the others, to save the most valuable and desirable features of wetlands, lakes and living streams. The law must then see to it that the water problems of farmers, cities and industries are not simply moved about and imposed on different people. New developments must add to the usable supply of water, not merely shift the use of existing supplies elsewhere. Fisher, Miller, Granger and Smith should live in peace, each respecting what the other has. They should not struggle to the death in the jungle of the commons, dog-eat-dog. Each new addition to irrigated acreage, each new factory, each expansion of municipal supply must be a new brick added to the structure that fosters and supports the people of Arkansas.

52. Water Resources Act, 1963, ch. 38, *modified for environmental protection by the Water Act, 1973, ch. 37.*